# NATIONAL PARK SERVICE (NPS) GUIDANCE FOR OZONE HEALTH ADVISORY PROGRAMS (March 1999)

In July 1997, the Environmental Protection Agency (EPA) established a new federal public health standard for ozone. The new standard is based on an 8-hour average concentration set at 0.08 parts per million (ppm), which is significantly more stringent than the old standard based on a 1-hour concentration set at 0.12 ppm. (Note: due to rounding, EPA considers an exceedance of the 8-hour standard when the ozone concentration reaches 0.085 ppm, or 85 parts per billion (ppb).) The EPA has also proposed rules for air quality index reporting (Federal Register Notice Volume 63, Number 236, 12/9/98). The EPA proposes to change the uniform air quality index used by States, and includes a sub-index for 8-hour ozone concentrations. The following guidance is generally consistent with the changes EPA is proposing for notifying the public about air pollution conditions.

Ozone is formed by chemical reactions between volatile organic compounds (VOCs) and oxides of nitrogen in the presence of sunlight and elevated temperatures. The primary manmade sources of VOCs and nitrogen oxides are industrial and automobile emissions. Ozone is a colorless gas that exists naturally in the stratosphere where it shields the Earth from the sun's harmful ultraviolet rays. However, ozone close to the Earth's surface is an air pollutant. Ozone concentrations can be transported hundreds of miles and affect remote areas of the country. High concentrations of ozone can cause inflammation and irritation of the respiratory tract, particularly during heavy physical activity. The resulting symptoms may include pain when taking a deep breath, coughing, throat irritation, and breathing difficulties. High concentrations of ozone can affect lung function and worsen asthma attacks. Exposure to ozone can damage lung tissue and increase the susceptibility of the lungs to infections, allergens, and other air pollutants. Medical studies have shown that health problems caused by ozone may continue long after exposure has ended. Because many NPS areas have exceeded, or are approaching, the health-based ozone standard, the following guidance is provided to ensure Servicewide consistency in dealing with this pervasive problem.

## ***Guidance for NPS Areas with Ozone Monitors***

This guidance describes procedures for notifying park visitors and employees of unhealthy ozone levels at NPS areas with ozone monitoring equipment. When hourly or 8-hour ozone averages are 0 to 84 ppb, conditions are good or moderate and no advisories are necessary. In most cases it is well into the late afternoon or evening before the calculated 8-hour average ozone concentration exceeds the standard. The objective is to provide employees and visitors timely notification of when the ozone is reasonably expected to

reach unhealthy conditions. Therefore, the advisory procedures include three consecutive hourly values as an indicator of when the 8-hour level would likely be exceeded. An advisory should be issued when any one of the following conditions occurs:

- When three consecutive hourly ozone values measured in the NPS area are 85 ppb or greater, issue an advisory for ozone sensitive group. (See Table 1.)

- When an 8-hour average ozone value measured in the NPS area is 85–104 ppb, issue an advisory for ozone sensitive group. (See Table 1.)

- When three consecutive hourly ozone values measured in the NPS area are 105 ppb or greater, issue an advisory for the general public. (See Table 1.)

- When an 8-hour average ozone value measured in the NPS area is 105 ppb or greater, issue an advisory for the general public. (See Table 1.)

Certain groups may be sensitive or particularly at-risk to the effects of ozone due to inherent sensitivity, medical conditions and exposure conditions. Therefore, EPA recommends ozone sensitive groups be notified when the 8-hour average ozone concentration is 85 to 104 ppb. Therefore, in NPS areas, an advisory should be issued for sensitive groups when the 8-hour average ozone values are 85 to 104 ppb. In addition, an ***advisory*** should also be issued when three consecutive hourly indicator values of 85 ppb or greater occur. Sensitive groups include active children and outdoor workers who regularly engage in outdoor activities and people with preexisting respiratory disease (e.g., asthma, chronic obstructive lung disease). Some individuals within these groups are unusually responsive to ozone and may experience much greater functional and symptomatic effects from exposure to ozone than the average person in the group. When 8-hour average ozone values of 105 ppb or greater or three consecutive hourly indicator values of 105 ppb or greater occurs, an advisory should be issued for the general public. See Table 1.

Park staff should coordinate the ozone advisory program during the average ozone season (April 1 through October 31) each year. Ozone conditions should be checked daily from the monitors located in the park and advisories issued as detailed below. If more than one ozone monitor is located within an NPS area and only one of the monitors measures one of the four occurrences listed above, the entire area should be included in the health advisory. Although ozone concentrations can reach unhealthy levels anytime during the day or night, tracking and reporting of unhealthy ozone conditions should be done during the day because visitor activity is highest and most park employees are at work. If any of the four ozone levels is measured in the morning, the advisory should be issued for the entire day. If any of these conditions are measured late in the afternoon and the forecasted weather includes high temperatures and air stagnation, such that unhealthy ozone concentrations could be anticipated, the advisory should then be issued for the evening and next day. The advisory should remain in effect until park staff cancels it due to improved conditions. On weekends/holidays, park dispatch or other extended hour employees may be advised to review ozone conditions and follow procedures for initiating an advisory.

All park supervisors and staff should be aware of how ozone affects people (pain when taking a deep breath, shortness of breath, coughing, wheezing, and scratchy eyes, nose and throat) and the different types of people at risk (people with pre-existing respiratory disease, such as asthma, and active children and adults). Park staff responsible for the ozone advisory program should be familiar with the operation and maintenance of the ozone monitoring equipment in the park. Park staff responsible for the advisory program should be able to read and interpret the data collected by the monitor and provide information to park managers concerning unhealthy ozone levels and the need for a health advisory. These individuals should respond to public inquiries and inform the State health department**,** State air quality regulatory authorities, and the Air Resources Division (ARD), of the issuance of the health advisory at the NPS area.

In issuing an advisory the following procedures should be initiated.

• Park staff should notify park communications and the advisory should be broadcast in a parkwide administrative message, advising affected groups of employees of unhealthy ozone conditions. See Table 1 for sample message to employees. Supervisors should advise staff of appropriate precautions to take while at work during the ozone health advisory. Options available to Supervisors include rescheduling physical activities and limiting the types and intensity of work (e.g. more frequent rest breaks, easy to moderate exertion activities that do not require accelerated heart rates and heavy breathing). Restricted activities will depend in part on the physical and medical conditions of individual employees.

• Public notification should be provided through notices at entrance stations and visitor centers. See Table 1 for sample messages to park visitors.

• Park staff should also notify the Public Affairs Officer at the park, State health department, and the ARD of the unhealthy levels. A press release may also be issued to the media, with information concerning the reason for the advisory at the park and anticipated duration of the advisory. Park staff may also send out electronic mail to park employees, informing them that a health advisory was issued.

## ***Guidance for NPS Areas without Ozone Monitors***

This guidance describes procedures for notifying park visitors and employees of unhealthy ozone levels at NPS areas without ozone monitoring equipment.

The park should contact the State health department or air quality regulatory authority and determine if the park is included in the area covered by the State ozone health advisory. If so, the park should issue an advisory for the applicable group (i.e., sensitive group or general public). The attached map shows those areas most likely to require coordination with the State health department.

Park staff should coordinate the ozone advisory program during the average ozone season (April 1 through October 31) each year. If ozone levels reach unhealthy levels, health advisory notifications should be posted during the day to coincide with highest visitor activity and normal working hours of most park employees. If the average ozone level is unhealthy in the morning, the advisory should be issued for the entire day. If the average ozone level is unhealthy late in the afternoon and the forecasted weather includes high temperatures and air stagnation, such that unhealthy ozone concentrations should be anticipated, the advisory should then be issued for the evening and next day. On weekends/holidays, park dispatch or other extended hour employees may be advised to follow procedures for initiating an advisory. When the State discontinues its health advisory the park should also cancel their advisory.

When an advisory is issued follow the same procedures identified above in the Guidance for NPS Areas with Ozone Monitors section. (See Table 1.)

The ARD will be available for consultation and review of ozone health advisory programs developed by NPS areas.

Table 1. National Park Service Ozone Health Advisory Guidance

| Ozone Value | Descriptor | Group | Sample Message |
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| | | Notified | |
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| 0 – 64 ppb (hourly or 8-hour average) | Good | none | none |
| 65 – 84 ppb (hourly or 8-hour average) | Moderate | none | none |
| 85 – 104 ppb (8-hour average) or if three consecutive hours of 85 ppb or greater occurs | Unhealthy for Sensitive Groups | Sensitive Groups | Employees:<br>"Ozone pollution conditions in the park have reached or are expected to reach unhealthy levels for sensitive groups. An ozone health advisory has been issued for today (or tomorrow). Sensitive groups at increased risk to ozone effects include outdoor workers who regularly engage in outdoor activities and people with preexisting respiratory diseases (e.g., asthma**,** chronic obstructive lung disease). This sensitive group should avoid strenuous or prolonged moderate outdoor activities and should limit their exposure until levels have dropped below unhealthy levels. Please consult your supervisor for guidance on work activities."<br><br>Visitors:<br>"Unhealthy ozone levels for sensitive groups have or are expected to occur today. Sensitive groups at increased risk to ozone effects include active children and people who regularly engage in outdoor activities and people with preexisting respiratory diseases (e.g., asthma**,** chronic obstructive lung disease) This sensitive group should limit their exposure by reducing the duration or intensity of physical exertion or by rescheduling activities until levels have dropped below unhealthy levels." |
| 105 ppb or greater (8-hour average) or if three consecutive hours of 105 ppb or greater occurs | Unhealthy | General Public | Employees:<br>"Ozone pollution conditions in the park have or are expected to reach unhealthy levels. An ozone health advisory has been issued for today (or tomorrow). All park employees should avoid strenuous or prolonged moderate excertion outdoors. All employees should limit their exposure and outside physical activities until levels have dropped below unhealthy levels. Please consult your supervisor for guidance on work activities."<br><br>Visitors:<br>"Unhealthy ozone levels have or are expected to occur today. This may cause irritation to lungs and discomfort in breathing for healthy individuals and more pronounced symptoms in people with respiratory disease, such as asthma. Individuals should limit their exposure by reducing the duration or intensity of physical excertion or by rescheduling outside physical activities until levels have dropped below unhealthy levels." |